

REMARKS

Claims 1-2 and 9 stand rejected under 35 U.S.C. 102(e) as being anticipated by Song et al. (U.S. Patent No. 6,342,938). Applicants traverse the rejection because the cited reference does not disclose a singular point control portion that controls positions of singular points, which in turn determine alignment of the liquid crystal.

The Office Action rejects claims 1-2 and 9 by referring to FIGs. 1A, 1B, and 3-4 of Song. Song discloses a liquid crystal layer 100 in which the director of the liquid crystal twists from one alignment layer to the other (see FIGs. 1A, 1B, and Col. 3, lns. 35-39). This feature of Song is different from the present invention, which has a liquid crystal that does not twist. Accordingly, Song does not have a singular point of a director of a liquid crystal like the present invention.

As shown in FIG. 42b of the present application, linear protrusions 126, 128, and 130 are conventional alignment control structures for aligning liquid crystal in a pixel region in a plurality of directions. Song's linear apertures 211, 212, 216, and 217 have the same function as the linear protrusions 126, 128, and 130 of FIG. 42B. That is, Song's linear apertures 211, 212, 216, and 217 are used as alignment control structures for aligning liquid crystal in the pixel region in a plurality of directions.

In particular, since the aperture 211 of Song shown in FIG. 3 is divided by the aperture 212, a singular point is not stably formed at the divided position because of the disturbance of the alignment. Furthermore, Song does not disclose or suggest using singular

points of a director of a liquid crystal. Accordingly, Applicants believe that Song's linear apertures 211, 212, 216, and 217 function only as conventional alignment control structures for aligning liquid crystal.

In contrast, a singular point control portion of the present invention controls positions of singular points that are generated by applying a voltage to the liquid crystal. In the present invention, the singular points generated in predetermined positions determine the alignment of the liquid crystal in the pixel region in the plurality of directions. More specifically, the alignment of the liquid crystal is determined by the singular points, rather than being controlled by the singular point control portion. For these reasons, withdrawal of the §102 rejection of claims 1-2 and 9 is respectfully requested.

Claims 1-3, 7, 9, and 10 stand rejected under 35 U.S.C. 102(e) as being anticipated by Koma (U.S. Patent No. 6,369,870). Applicants traverse the rejection for the reasons recited above with respect to the §102 rejection of Song.

The Office Action cites FIG. 4 as showing an orientation control window that acts as a singular point control portion. FIG. 15 is further cited as showing a first singular point being formed under the orientation control window and a second singular point as being formed between pixel electrodes. However, as discussed on page 20, line 14 of the present application, an orientation control window 11 is similar to the conventional alignment separation control methods that distort electric fields by using structures in the form of

protrusions or slits. Koma does not disclose or suggest using singular points of the director of the liquid crystal, as recited in the present claims.

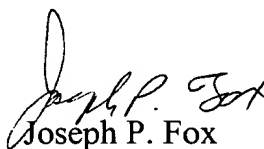
More specifically, Koma fails to disclose or suggest singular points such as those shown in FIGs. 20A or 20B of the present application, and a relationship between the singular points, as shown in FIG. 1 of the application. The present invention controls alignment separation over the direction of alignment of liquid crystal molecules by controlling the positions where singular points are formed. Distortion of electric fields is used only for controlling the positions where singular points are formed (see Applicants' specification page 20, lines 19-30). Since Koma fails to disclose or suggest a singular point control portion, as in the present invention, withdrawal of the §102 rejection is respectfully requested.

For the foregoing reasons, Applicants believe that this case is in condition for allowance, which is respectfully requested. The Examiner should call applicants' attorney if an interview would expedite prosecution.

Respectfully submitted,

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